

Novel Hybrid Propulsion System for Sample Return Missions, Phase I

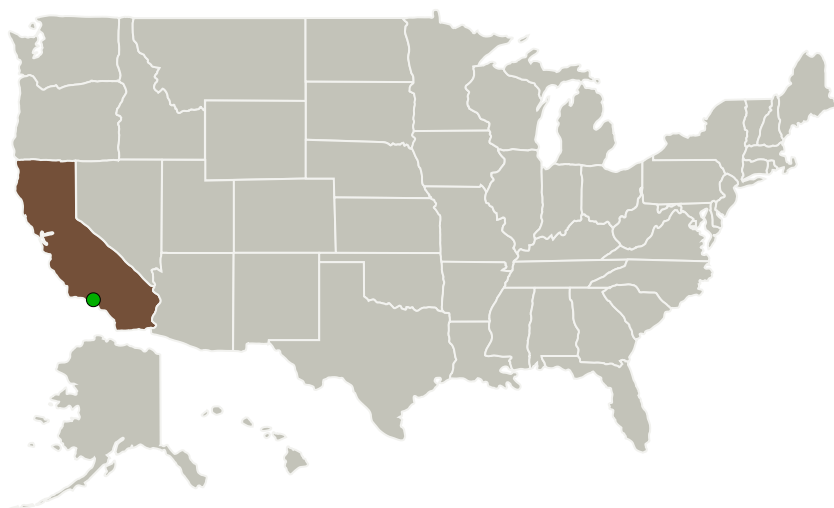


Completed Technology Project (2016 - 2016)

Project Introduction

Parabilis Space Technologies is pleased to propose an innovative hybrid motor propulsion solution utilizing a novel bi-axial grain design in response to solicitation S4.03, Spacecraft Technology for Sample Return Missions. Due to the innovative motor design, the proposed system is significantly shorter than a conventional hybrid motor system but maintains safety, reduced complexity, and storability advantages of hybrid motor systems. The system leverages additive manufacturing for the rocket nozzle and injector system in order to decrease both weight and part count. This innovation is an ideal propulsion technology for a variety of sample return missions from Mars or other bodies with significant gravity wells.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Parabilis Space Technologies, Inc.	Lead Organization	Industry Historically Underutilized Business Zones (HUBZones)	SAN MARCOS, California
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

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Primary U.S. Work Locations

California

Project Transitions

 **June 2016:** Project Start

 **December 2016:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139691>)

Images



Briefing Chart Image

Novel Hybrid Propulsion System for Sample Return Missions, Phase I (<https://techport.nasa.gov/image/130701>)



Final Summary Chart Image

Novel Hybrid Propulsion System for Sample Return Missions, Phase I Project Image (<https://techport.nasa.gov/image/126498>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Parabilis Space Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

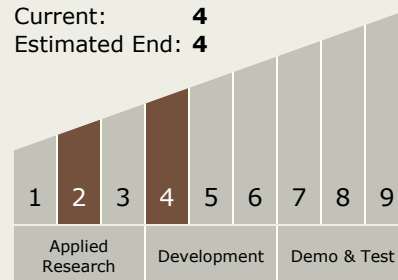
Christopher S Grainger

Technology Maturity (TRL)

Start: 2

Current: 4

Estimated End: 4



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Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.1 Chemical Space Propulsion
 - └ TX01.1.5 Hybrids

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System